

**Listing of Claims:**

1. (Currently amended) A device activated by biometric authentication, comprising:

a biometric sensor configured to ~~obtain~~ measure a[[n]] specific, internal, sub-epidermal physiological characteristic of structure within a user from which a[[n]] ~~internal, sub-dermal~~ biometric marker of said user may be determined, said biometric sensor comprising;

an energy emitter configured to emit an electromagnetic energy signal toward said user, wherein said electromagnetic energy signal is configured to penetrate said user to measure said specific, internal, sub-epidermal physiological characteristic of structure within said user, and

an energy sensor configured to detect an electromagnetic energy signal returned from said user responsive to said emitted electromagnetic energy signal to thereby obtain a measurement of said specific, internal, sub-epidermal structure; and

a memory module in communication with said biometric sensor comprising a biometric profile of an authorized user of said device,

wherein said device is configured to measure said specific, internal, sub-epidermal physiological characteristic of structure within said user using said biometric sensor, to determine an ~~internal, sub-dermal~~ biometric marker of said user therefrom, to compare said biometric marker to said biometric profile of said authorized user of said device, and to generate an authentication signal if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user of said device.

2. (Currently amended) The device activated by biometric authentication of claim 1, wherein said device is configured to determine from said measurement of said specific, internal, sub-epidermal structure a measurement of ~~biometric marker~~ corresponds to an internal, and non-volitional physiological process occurring within said user, and wherein said biometric marker is determined using said measurement of said internal, non-volitional physiological process.

3. (Previously presented) The device activated by biometric authentication of claim 1, wherein said biometric sensor further comprises an activation sensor.

4. (Currently amended) The device activated by biometric authentication of claim 1, wherein said biometric sensor further comprises a translator whereby an energy signal received from said energy sensor is translated into an electronic signal comprising said measurement of said specific, internal, sub-epidermal structure used to determine said ~~internal, sub-dermal~~ biometric marker of said user.

5. (Previously presented) The device activated by biometric authentication of claim 1, wherein said energy emitter emits electromagnetic energy in the form of a light wave.

6. (Previously presented) The device activated by biometric authentication of claim 5, wherein said light wave is infra red light, ultraviolet light, nonvisible light, or visible light.

7. (Previously presented) The device activated by biometric authentication of claim 5, wherein said energy sensor senses light waves.

8. (Previously presented) The device activated by biometric authentication of claim 7, wherein said light wave is infra red light, ultraviolet light, nonvisible light, or visible light.

9. (Canceled)

10. (Previously presented) The device activated by biometric authentication of claim 1, wherein said memory module includes a code to trigger an actuator.

11. (Currently amended) A device activated by biometric authentication, comprising:

a biometric sensor configured to measure a specific, continuous, time-variant, ~~internal~~ and, sub-epidermal physiological process occurring within [[of]] a user from which ~~an continuous, time-variant, internal, sub-dermal~~ biometric marker of said user may be determined, said biometric sensor comprising;

an energy emitter configured to emit an energy signal toward said user,

and

an energy sensor configured to detect an energy signal returned from said user responsive to said emitted energy signal; and

a memory module comprising a biometric profile of an authorized user of said device in communication with said biometric sensor, wherein said memory module comprises computer-readable instructions to cause said device to perform a method of authenticating said user, the method comprising;

emitting a plurality of energy signals toward said user using said energy emitter,

detecting a plurality of returned energy signals from said user responsive to said emitted energy signals, wherein said returned energy signals comprise respective measurements of said specific, continuous, time-variant, ~~internal~~, and sub-epidermal physiological process occurring within said user,

determining said ~~continuous, time-variant, internal, sub-dermal~~ biometric marker of said user using said measurements of said, specific, continuous, time-variant, ~~internal~~, and sub-epidermal physiological process [[of]] occurring within said user;

comparing said biometric marker to said biometric profile of said authorized user of said device; and

generating an authentication signal if said biometric marker matches said biometric profile of said authorized user of said device.

12. (Currently amended) A biometric authentication device, comprising:  
a biometric sensor constructed to sense a[[n]] specific, internal, sub-epidermal physiological characteristic of structure within a human from which an ~~internal, sub-dermal~~ biometric marker of said human may be determined, said biometric sensor comprising;

an electromagnetic radiation emitter configured to emit electromagnetic radiation toward said human, wherein said electromagnetic radiation is configured to penetrate said human to measure a[[n]] specific, internal, sub-epidermal physiological characteristic of structure within said human, and

an electromagnetic radiation detector configured to detect electromagnetic radiation returned from said human responsive to said emitted electromagnetic radiation;  
and

a memory module comprising a biometric profile of an authorized user of said device operatively communicating with said biometric sensor to store information communicated by said biometric sensor,

wherein said biometric authentication device is configured to measure a[[n]] specific, internal, sub-epidermal physiological characteristic of structure within said human using said biometric sensor, to determine an ~~internal, sub-dermal~~ biometric marker of said human therefrom, to compare said biometric marker to said biometric profile of said authorized user of said device, and to generate an authentication signal if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user of said device.

13. (Currently amended) The biometric authentication device of claim 12, wherein said device is configured to use said measurement of said specific, internal, sub-epidermal biometric marker structure within said user to determine a measurement of ~~corresponds to~~ an internal, non-volitional physiological process occurring within said human, and wherein said biometric marker is determined using said measurement of said internal, non-volitional physiological process.

14. (Canceled).

15. (Currently amended) The biometric authentication device of claim 12, wherein said emitter emits electromagnetic radiation of a wavelength and an energy level to measure a[[n]] specific internal, sub-epidermal structure within said human, the structure corresponding to a non-volitional physiological process occurring within said human, wherein the device is configured to determine a measurement of said non-volitional physiological process using said measurement of said structure, and wherein said biometric marker is determined using said measurement of said internal, non-volitional physiological process.

16. (Previously presented) The biometric authentication device of claim 12, wherein said biometric sensor further comprises:

an activation device configured to activate said electromagnetic radiation emitter and said electromagnetic radiation detector.

17. (Currently amended) A biometrically activated and substantially planar card, comprising:

a first surface and an opposing second surface;

a biometric sensor integrally contained within said planar card, said biometric sensor configured to obtain a measurement of a[[n]] specific, internal, sub-epidermal physiological characteristic of structure within a user from which ~~an internal, sub-dermal~~ biometric marker of said user may be determined, said biometric sensor comprising:

an electromagnetic energy emitter embedded within said first surface of said planar card, wherein said electromagnetic energy emitter is configured to emit electromagnetic energy capable of penetrating said user to measure an internal, sub-epidermal ~~physiological characteristic of~~ structure within said user, and

an electromagnetic energy receiver embedded within said first surface of said planar card;

an activation sensor embedded within said first surface of said planar card, said activation sensor in electronic communication with said biometric sensor whereby said activation sensor controls an on and an off condition of said biometric sensor;

a memory module comprising a biometric profile of an authorized user of said planar card embedded within said planar card, said memory module in communication with said biometric sensor; and

a data communicator embedded within said planar card, said data communicator in communication with said memory module for communicating data to an external source,

wherein said planar card is configured to measure said specific, internal, sub-epidermal ~~physiological characteristic of structure within~~ said user using said biometric sensor, to determine said ~~internal, sub-dermal~~ biometric marker of said user therefrom, to compare said biometric marker to said biometric profile of said authorized user of said planar card, and to transmit an authentication signal to said data communicator if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user of said planar card.

18. (Previously presented) The card activated by biometric authentication of claim 17, further comprising a data screen embedded on a surface of said planar card, said data screen in communication with said memory module, wherein said planar card is configured to activate said data screen responsive to said authentication signal.

19. (Currently amended) A cellular phone activated by biometric authentication, comprising:

a cellular phone having an activated state and an inactivated state controlled by an activation switch;

a biometric sensor embedded within said cellular phone configured to measure a[[n]] specific, internal, sub-epidermal ~~physiological characteristic of structure within~~ a user from which an ~~internal, sub-dermal~~ biometric marker of said user may be determined, said biometric sensor comprising an electromagnetic energy emitter and an electromagnetic energy receiver positioned on a surface of said cellular phone, wherein said electromagnetic energy emitter is configured to penetrate said user to measure a[[n]] specific, internal, sub-epidermal ~~physiological characteristic of structure within~~ said user;

a memory module comprising a biometric profile of an authorized user of said cellular phone embedded within said cellular phone, said memory module in communication with said biometric sensor and said activation switch,

wherein said cellular phone is configured to measure said specific, internal, sub-epidermal ~~physiological characteristic of structure within~~ said user using said biometric sensor, to determine said ~~internal, sub-dermal~~ biometric marker of said user therefrom, to compare said biometric marker to said biometric profile of said authorized user of said cellular phone, and to generate an authentication signal if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user of said cellular phone.



20. (Currently amended) A method of authenticating a user, comprising:

- generating an electromagnetic signal, wherein said electromagnetic signal is configured to penetrate said user to measure a ~~a[[n]]~~ specific, internal, sub-epidermal ~~physiological characteristic of structure within~~ said user, wherein an electromagnetic signal is returned from said user responsive to said generated electromagnetic signal, and wherein said returned electromagnetic signal comprises a measurement of said specific, internal, sub-epidermal ~~physiological characteristic of structure within~~ said user;
- detecting said returned electromagnetic signal;
- translating said returned electromagnetic signal into ~~an internal, sub-dermal~~ biometric marker of said user, wherein said ~~internal, sub-dermal~~ biometric marker, is embodied as an electrical signal;
- transmitting said ~~internal, sub-dermal~~ biometric marker to a memory module having pre-existing stored data thereon, said stored data comprising a biometric profile of an authorized user;
- comparing said ~~internal, sub-dermal~~ biometric marker with said biometric profile of said authorized user; and
- generating an authentication signal if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user.

21-22. (Canceled)

23. (Currently amended) A method of activating an electrical device based on biometric authentication, comprising:

obtaining a plurality of measurements of a continuous, time-variant, ~~internal~~, and sub-epidermal physiological process occurring within a user;

determining a ~~continuous, time-variant, internal, sub-dermal~~ biometric marker of said user using said measurements of ~~said continuous, time-variant internal, sub-dermal physiological process occurring within said user~~;

creating a user biometric profile of said user, wherein said user biometric profile comprises said ~~continuous, time-variant, internal, sub-dermal~~ biometric marker;

comparing said user biometric profile to a stored biometric profile, wherein said comparing comprises comparing said biometric marker to said stored biometric profile; and

generating an activation signal for said electrical device if said biometric marker of said user matches said stored biometric profile.

24. (Currently amended) A method for generating a coded signal comprising:

- emitting a sub-~~epi~~dermal penetrating electromagnetic radiation beam directed to an individual, wherein said electromagnetic ~~[[energy]]~~ radiation beam is configured to penetrate said individual to measure a~~[[n]]~~ specific, internal, sub-~~epi~~dermal ~~physiological characteristic of structure within~~ said individual;
- reflecting said electromagnetic ~~[[energy]]~~ radiation beam off internal, sub-~~epi~~dermal physiological ~~reflective matter of structure within~~ said individual to produce a detectable return signal;
- detecting said return signal, wherein said return signal comprises a measurement of said specific, internal, sub-epidermal structure within said user;
- determining ~~an internal, sub-dermal~~ biometric marker of said individual using said ~~return signal~~ measurement of said return signal;
- comparing said ~~internal, sub-dermal~~ biometric marker to a stored biometric profile previously developed from said individual; and
- generating a coded signal if said ~~internal, sub-dermal~~ biometric marker matches said stored biometric profile.

25-26. (Canceled)

27. (Currently amended) The device of claim 1, wherein said internal, sub-epidermal ~~biometric marker~~ structure within said user corresponds to one selected from the group consisting of a histological trait, bone density, ~~cardiac rhythm, diacritic notch reading, blood oxygen level,~~ capillary density, ~~glucose level, hematocrit level,~~ and sub-epidermal layer analysis structure.

28. (Currently amended) The device of claim 1, wherein said biometric sensor is configured to measure a plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user.

29. (Currently amended) The device of claim 28, wherein said device is configured to select one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user, to measure said selected one, to determine an ~~internal, sub-dermal~~ biometric marker using said measurement of said ~~selected one of said plurality of different types of specific, internal, sub-dermal physiological characteristics of said user,~~ and to generate an authentication signal if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user of said device.

30. (Currently amended) The device of claim 29, wherein said emitter is configured to prevent identification of said selected one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics structures~~ measured by said biometric sensor.

31. (Currently amended) The device of claim 28, wherein said device is configured to measure a selected plurality of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user using said biometric sensor, to derive a selected plurality of ~~internal, sub-dermal~~ biometric markers of said user using said selected plurality of measurements, and to generate an authentication signal if each of said selected plurality of ~~internal, sub-dermal~~ biometric markers matches said biometric profile of said authorized user.

32. (Currently amended) The device of claim 1, wherein said biometric sensor is configured to measure a plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user, and wherein said biometric sensor is configured to prevent identification of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user measured by said biometric sensor.

33. (Currently amended) The device of claim 32, wherein the device is further configured to,

select one of said plurality of different specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user,

emit electromagnetic energy from said electromagnetic energy emitter to measure said selected one of said plurality of different specific, internal, sub-epidermal ~~physiological characteristics of structures within~~ said user,

receive a returned electromagnetic energy signal from said user responsive to said emitted electromagnetic energy, wherein said returned electromagnetic energy signal comprises a measurement of said selected one of said plurality of different types of specific, internal, sub-epidermal ~~biometric characteristics of structures within~~ said user,

determine an ~~internal, sub-dermal~~ biometric marker of said user using said returned electromagnetic energy signal, and

generate an authentication signal if said ~~internal, sub-dermal~~ biometric marker matches said biometric profile of said authorized user of said device.

34. (Currently amended) The device of claim 32, wherein the device is further configured to,

select a first one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics~~ structures and a second one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics~~ structures,

emit a first electromagnetic energy signal from said electromagnetic energy emitter to measure said first one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of~~ structures within said user,

receive a returned first electromagnetic energy signal from said user responsive to said first emitted electromagnetic energy signal comprising a measurement of said first one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of~~ structures within said user,

determine a first ~~internal, sub-dermal~~ biometric marker of said user using said ~~returned measurement of said first electromagnetic energy signal~~ specific, internal, sub-epidermal structure,

emit a second electromagnetic energy signal from said electromagnetic energy emitter to measure said second one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of~~ structures within said user,

receive a returned second electromagnetic energy signal from said user responsive to said second emitted electromagnetic energy signal comprising a measurement of said second one of said plurality of different types of specific, internal, sub-epidermal ~~physiological characteristics of~~ structures within said user,

determine a second ~~internal, sub-dermal~~ biometric marker of said user using said ~~returned measurement of said second electromagnetic energy signal~~ specific, internal, sub-epidermal structure,

compare said first biometric marker and said second biometric marker to said biometric profile of said authorized user of the device, and

generate an authentication signal if said first biometric marker and said second biometric marker match said biometric profile of said authorized user of said device.

35. (New) A device activated by biometric authentication, comprising:

- a biometric sensor configured to measure a plurality of different specific, internal, physiological characteristics of a user, said biometric sensor comprising,
  - an energy emitter configured to emit an electromagnetic energy signal toward said user, wherein said electromagnetic energy signal is configured to penetrate said user to measure one or more of said specific, internal, sub-epidermal physiological characteristics of said user, and
  - an energy sensor configured to detect an electromagnetic energy signal returned from said user responsive to said emitted electromagnetic energy signal to thereby obtain a measurement of said one or more specific, internal, sub-epidermal physiological characteristics of said user; and
- a memory module in communication with said biometric sensor comprising a biometric profile of an authorized user of said device,
  - wherein the device is configured to select a first one and a second one of said plurality of specific, internal, sub-epidermal physiological characteristics of said user,
  - emit an electromagnetic energy signal from said electromagnetic energy emitter to measure said first specific, internal, sub-epidermal physiological characteristic, and said second specific, internal, sub-epidermal physiological characteristic,
  - receive a returned energy signal comprising said measurements of said first and second specific, internal, sub-epidermal physiological characteristics of said user,
  - determine a first biometric marker of said user using said measurement of said first specific, internal, sub-epidermal physiological characteristic,
  - determine a second biometric marker of said user using said measurement of said second specific, internal sub-epidermal physiological characteristic, and
  - generate an authentication signal if said first biometric marker and said second biometric marker match a biometric profile of an authorized user of said device.

36. (New) A device activated by biometric authentication, comprising:

- a biometric sensor configured to measure a plurality of different specific, internal, physiological characteristics of a user, said biometric sensor comprising,
  - an energy emitter configured to emit an electromagnetic energy signal toward said user, wherein said electromagnetic energy signal is configured to penetrate said user to obtain measurements of one or more of said plurality of specific, internal, sub-epidermal physiological characteristics of said user, and
  - an energy sensor configured to detect an electromagnetic energy signal returned from said user responsive to said emitted electromagnetic energy signal to thereby obtain measurements of said one or more specific, internal, sub-epidermal physiological characteristics of said user; and
- a memory module in communication with said biometric sensor comprising a biometric profile of an authorized user of said device,
  - wherein the device is configured to select a first one and a second one of said plurality of specific, internal, sub-epidermal physiological characteristics of said user,
  - emit a first electromagnetic energy signal from said electromagnetic energy emitter to measure said first specific, internal, sub-epidermal physiological characteristic,
  - receive a first returned energy signal comprising said measurement of said first specific, internal, sub-epidermal physiological characteristic of said user using said energy sensor,
  - emit a second electromagnetic energy signal from said electromagnetic energy emitter to measure said second specific, internal, sub-epidermal physiological characteristic,
  - receive a second returned energy signal comprising said measurement of said second specific, internal, sub-epidermal physiological characteristic of said user using said energy sensor,
  - determine a first biometric marker of said user using said measurement of said first specific, internal, sub-epidermal physiological characteristic and a second biometric marker of



said user using said measurement of said second specific, internal, sub-epidermal physiological characteristic,

generate an authentication signal if said first biometric marker and said second biometric marker match a biometric profile of an authorized user of said device.